

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE;

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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No. 2264.—VOL. XLIX.

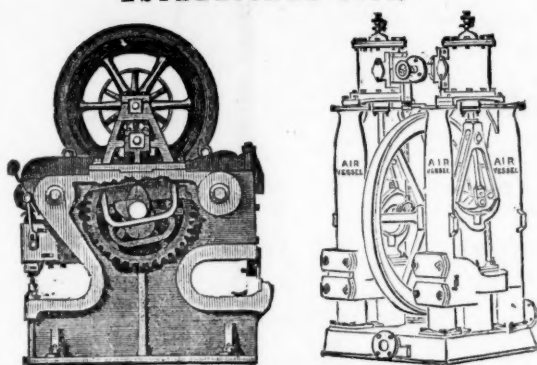
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PARIS,
BRONZE MEDAL, 1867.



ORDER OF THE CROWN OF PRUSSIA.



FALMOUTH,
SILVER MEDAL, 1867

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the
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exhibited the McKean Drill alone as the MODEL BORING MACHINE
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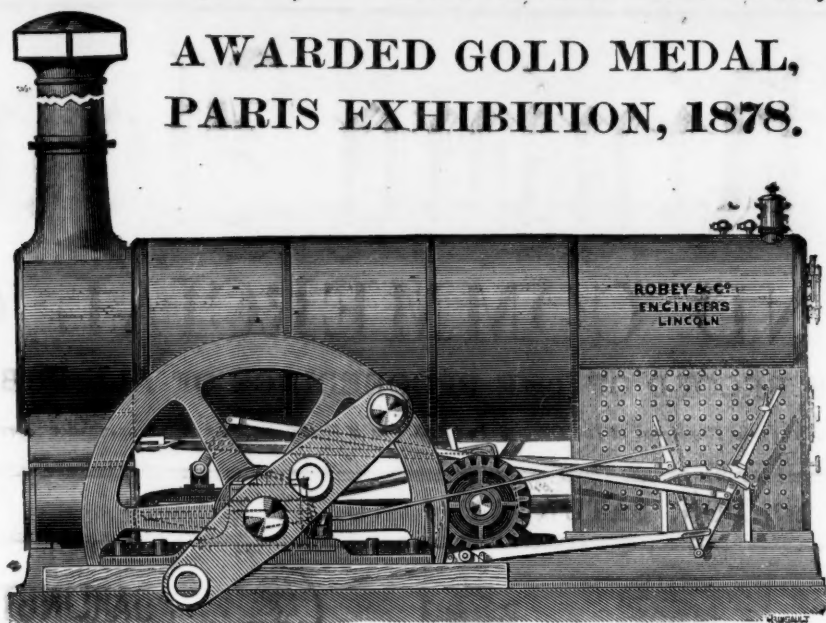
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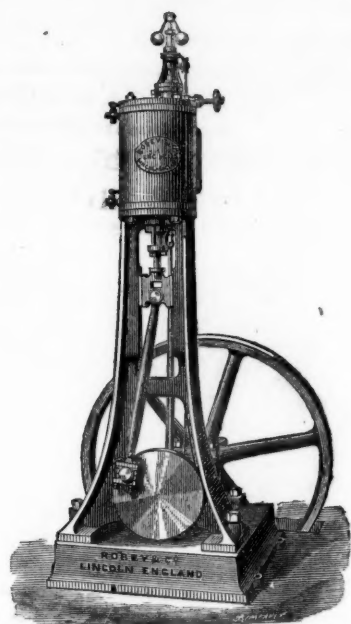
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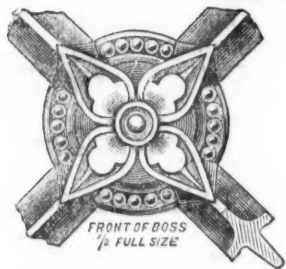
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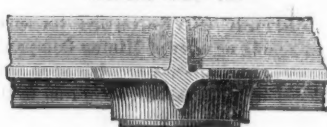
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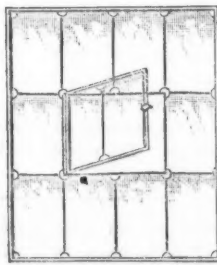
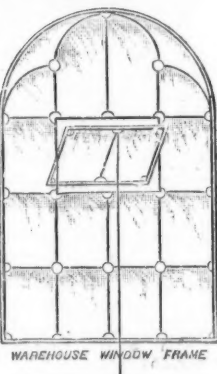
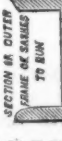
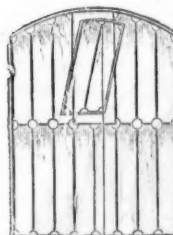
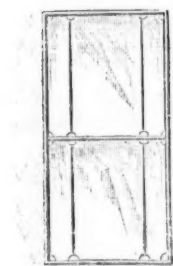
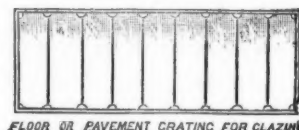
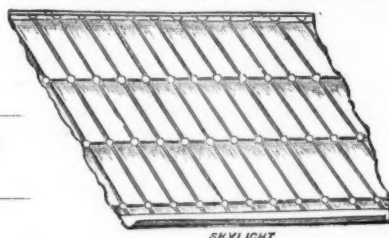
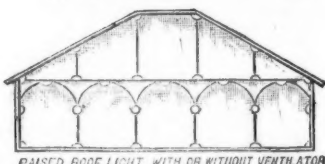
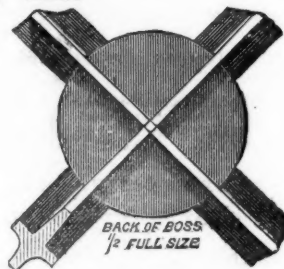
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TELEGRAPH ENGINEER,

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Original Correspondence.

BURNING PETROLEUM.

SIR,—Our attention having been drawn to certain paragraphs which have lately appeared in your valuable paper and others claiming for a Mr. Salisbury the credit for a method of burning petroleum by injecting it into furnaces, we ask for permission to point out that the injecting or forcing petroleum, or other liquid fuel, by means of superheated steam into a furnace or combustion chamber or chambers in such a manner that it may be vapourised and dispersed, and its combustion be completely effected, was patented some years ago by Messrs. Wise, Field, and Aydon, that it has been successfully used in various places and for various purposes, that Mr. Harrison Aydon went over to Canada, and practically demonstrated the application of the system (named after him) there, and that full particulars will be found in a paper read by that gentleman before the Institute of Civil Engineers. We have only to add that the patent in question is still in force.

FIELD, FIELD, AND COTTON.

London, Jan. 3.

ON COMPRESSED-AIR MACHINES.

SIR,—There has been no new light thrown on the subject of air compressing of late years, as to the extent of the loss of power, and how that loss is occasioned; whether the chief cause be from the heat developed in the act of compressing the air, or from the friction of the air in being forced through small pipes to a considerable distance. It is evident the loss of power under the latter head will be directly as the length of piping and as the cube of the velocity. The power also must be increased as the density increases—that is, twice the power is required to drive air in the same pipes at 50 lbs. that is required for 25 lbs. pressure. Prof. Rankine, who has given this question great attention, considers that 25 lbs. pressure is the most advantageous one to be used, because of the great loss of power from using high pressures, amounting, as he says, to 70 or 80 per cent. of the steam-power in some cases. Prof. Rankine, in a communication to the Institution of Civil Engineers in Scotland, states "that is almost impossible to decide on the general question of the comparative economy of compressed air and of wire-ropes as a medium for transmitting power to underground workings for the purpose of driving coal-cutting machines, hauling engines, pumps, or other machinery. From ordinary experience of rope haulage on mineral railways, the loss of power may be estimated at 20 per cent. per mile; on the other hand, in transmitting power by means of compressed air, there was great loss of power in the air-compressors, arising mainly from the waste of the heat developed by the compression. This loss had seldom been less than 65 to 75 per cent. of the whole power of the steam-engine; in extreme cases the loss has been more. Friction of the air in well proportioned pipes, which increased with the distance to which power had to be transmitted, might, he thought, be reduced to 10 per cent. per mile. The best economy has been obtained with moderate pressures—say, 25 lbs. or 30 lbs., for with these the effects of heat and waste of power were moderate."

These views, however, are not in accordance with the experience of other practical men; the loss at the compressors is admitted to be 25 per cent., and sometimes 30 per cent., at moderate pressures, there remains the loss from friction and leakage of air in the pipes; allowing 10 per cent. per mile for this cause, the whole loss of power for a mile would be from 35 to 40 per cent., and 60 per cent. or more would be afterwards available for driving other machines underground.

It is not advisable to use compressed air machines in positions where steam-engines could be readily applied. This would be like erecting two engines where one would have sufficed, but for general underground use no power is so convenient for application in driving coal-cutters, hauling engines, or pumps. The relative economy of steam or compressed air must be decided by the conditions of the mine in each case. At the same time it is probable that adaptation to circumstances as well as economy will in many cases be in favour of compressed air.

At the St. Gothard Tunnel, now being driven through the Alps, 16 air compressors are in operation at each end of the tunnel, serving for transmitting power through large pipes to the drilling machines, and also for ventilating the tunnel. The length of pipes on the north side of the tunnel is 6670 yards, and on the south side 5894 yards. These are made of sufficient area to transmit air compressed to 8 atmospheres, equal to 120 lbs. above the atmosphere, into the face on each side the tunnel. The pipes are of such area that, notwithstanding the high pressure of 8 atmospheres, the velocity of the inflow of air is so low that a sufficient quantity is transmitted through a length of over 3½ miles to drive 18 or 20 rock-drills at the end, as well as to ventilate the tunnel.

The air-compressing plant erected at the New Tredegar Colliery, in the Rhymney Valley, Monmouthshire, consists of two 21-in. horizontal steam cylinders, 5-ft. stroke; air compressors 21-in. diameter, 5-ft. stroke, the steam and air pistons being attached to the same piston rod. The cylinder ends are 2 ft. apart. A heavy fly-wheel is fixed on the centre of the crank shaft. A wrought-iron receiver, 35 × 5½ ft. diameter, is placed on the outside of the engine-house. The air is conveyed through 6-in. pipes down the pit, and a further distance underground to another receiver, 35 ft. by 4 ft. diameter, altogether 453 yards from the first receiver. From the second receiver the air flows in 6-in. pipes to the west hauling-engine, a distance of 88 yards. From the second receiver to the east hauling-engine 6-in. pipes are used, the distance being 198 yards. The two hauling engines are similar in construction; each has two horizontal cylinders, 12-in. diameter, 18-in. stroke, geared in the ratio of 6 to 1, the pistons on the crank shaft being 1½ ft. diameter each, and the spur wheels 7½ ft. diameter, one for each drum shaft. The drum shafts and drums are in the same line; each drum is 3½ ft. in diameter, 1 ft. in width, and is put in or out of gear by sliding carriages; they are 3 ft. apart.

The west hauling-engine is placed over the road, the trams passing under. One drum pulls up an incline of 528 yards with an average fall of 2½ in. per yard, 14 trams of coal, each tram weighing 8 cwt., and carrying 16 cwt. of coal, equal to 16·8 tons. The empty trams run down with the rope. The second drum pulls the empty trams from the pit up an incline to the engine 176 yards.

The east hauling-engine, also placed over the road, works an incline to the south 616 yards in length, average dip 2½ in. per yard. In this district there are two small pumping engines—one at the extremity of the way, the other half way outbye. Each pump has two 7-in. cylinders, 7-in. stroke, 4½-in. rams, single acting, driven also by compressed air, and going 45 strokes per minute. Glycerine is used as a lubricant for the hauling-engine cylinders. To prevent the formation of ice the exhaust opening is made large, and as short as possible. The air-pipes in the pit to the engines are all 6 in. diameter, of cast-iron, this size gives less friction than usual, and also affords a reserve of power, thus aiding the receivers. The advantage of hauling-engines driven on this principle is that they can be placed in any part of the mine where they may be needed, saving the loss of power from using ropes of extra length. The loss of power by condensation in long lengths of steam-pipes is very great, the inconvenience of dealing with exhaust steam in a mine is well known. All this is avoided by the use of compressed air as a motive power for machinery, which may be applied for every purpose in substitution of horses in a mine.

The average pressure on the steam cylinder at the bank is about 23½ lbs. per square inch, which with area of piston 346½ in., and making 30 revolutions per minute, gives 73 horse power, or 146-horse power for both cylinders. The average pressure in the air compressors is 20½ lbs., yielding 65·3-horse power, or 130·6-horse power for both the cylinders. The west hauling-engine yields 20·3-horse power, or 40·6-horse power for the two cylinders. The east hauling-engine yields 39·2-horse power, or 78·4-horse power for both the cylinders. The loss of power at the air compressor is 10½ per cent., and in the hauling-engines nearly 9 per cent., making together 19½ per cent. The weight of the column of the air in the pit compressed to 35 lbs. is about 2 lbs. per square inch.

From what we have stated above it appears that 19½ per cent. of the steam power of the surface compressing engines is lost before passing through the hauling-engine cylinders, one (the west hauling-engine) being at a distance of 540 yards from the air compressors, and the east hauling-engine a distance of 650 yards. The maximum pressure (35 lbs.), the short length of piping, and its comparatively large area all contribute to produce this useful effect so favourable to the system and for actuating machinery by this power.

ROCK-DRILLING MACHINERY.

SIR,—Referring to a letter in last week's Journal, allow me to say again that there are five openings or ports into the valve cylinder of the Eclipse Rock-Drill, and no more. Also that I adhere to every word of my previous letters to you.

Southampton Buildings, Jan. 7.

TAMPING SHOTS.

SIR,—The following extract from the description of the Mont Cenis Tunnel, in Simms on "Tunnelling," shows how stemming shots by stemmers may be dispensed with. As this is a frequent cause of accident it seems to deserve a place in the Journal. "According to the system of blasting more lately approved the cartridge employed was of peculiar construction. It consisted of a cylinder of paper containing powder, fuse, and tamping, the tamping consisting of stone broken small, or of clean dry sand, and was rendered effective by enclosing in the cartridge, in front of or above the powder, a wooden wedge or cone, with the base towards the powder. Charging a hole consisted simply in placing one of these cartridges within it. The powder in exploding acted on the base of the cone, which by its action broke the paper enclosing the sand, and forced the sand against the sides of the hole. The cone thus wedged in presented a fixed surface, behind which the powder acted. The charge of powder varied from one-third to one-half the depth of the hole, depending on the nature of the material, but with the perfectly secure tamping a greater force was obtained from a given quantity of powder, and smaller charges were needed than before it was introduced."—*Rutherglen, Jan. 7.*

ROBERT THOMAS MOORE.

RICHMOND MINE—A REVIEW OF THE SITUATION.

SIR,—The recent fall in the price of the shares of this company has given cause for considerable alarm amongst those who are interested in the adventure. The shares during the general depression which has prevailed have been remarkably steady, but since the furnaces have commenced running the price has not been sustained, and during the past week they have rapidly declined. There are several causes which account for it, although the mining public are not fully acquainted with them. The object of this letter is an examination of the causes, and it must be left with your readers to judge the importance of them. Since the furnaces were destroyed improvements were reported in the mine, and they were said to be of such a character as to materially enhance the value of the shares. The prospects having so much improved, shareholders have held their shares very firmly, but it is now a question whether they have or have not been over sanguine. The two new furnaces which are working were constructed with a greater capacity for smelting than the old ones, but the results attained by the old furnaces have not been approached by those of the new ones as yet, and this is one of the causes for the uneasiness which is at present felt. No official reason has been given for the meagre returns which have been made, but there must be one for it, and the shareholders before long must be made acquainted with it. It has been suggested by those who have acquaintance with these matters that the furnaces are too large to be handled. The old furnaces had a capacity of about 50 tons per day, and the new ones are said to have a capacity for 100 tons, and yet so far the results are very inferior to those of the old ones. It follows that the blast required for the new furnaces should be proportionately increased with the capacity of the furnace, and this may not have been gained for the want of more engine power. If the blast is a difficulty, one of two things will have to be done—either to reduce the size of the furnaces or increase the blast. As Mr. Probert (who doubtless has been consulted in the construction of the new furnaces) is at present in England, he will be able to enlighten us upon this point. Another cause at work which is tending to depress the price of shares is the thought of the February dividend—whether it will be paid or not. It has not been earned, and it is now impossible for it to be earned by the time it is due. The funds which were in hand must by this time be practically exhausted. It is to be hoped that the company will not resort to borrowing money that it may be paid. In the Mining World of last week a correspondent briefly drew attention to a "complaint" against Mr. Daniel Meyer which had been filed in the Fourth District Court of San Francisco. Mr. Daniel Meyer in the "complaint" is charged with "frauds and breaches of trust," in connection with the Tybo Consolidated Mining Company, of a character unknown to the British mining public, and the damages are laid at \$1,000,000. It is not my intention to enter into or discuss this matter, as it has yet to be decided in the Court, and as the "complaint" fills a pamphlet of 26 pages, it would be impossible in this letter to give anything like a full account of it, but any who are interested can see the pamphlet for themselves by calling at my office. Until, however, the case is settled it would, I think, be most unadvisable for the company to go to Mr. Daniel Meyer for further funds. The lesson is so terrible to any mining company which has its concerns financed that it is necessary to pause and think before getting involved in the meshes of the money lender. The Tybo had a capital of \$2,000,000, in \$200 shares, and instead of reaping 50 per cent. profit not a penny has been paid to the shareholders, and the shares now are of very little value. The Tybo Consolidated, if I mistake not, was registered in England, but for some reason was never introduced to the public. It has been a lucky escape for the British capitalist. It may be argued that even if the case is proved against Mr. Daniel Meyer, and that if he is at fault in the Tybo, it does not follow that he would, even if he had the opportunity, act in like manner to the Richmond Company. Such logic I am not accustomed to follow. Mr. Probert, in his reply, shows that Mr. Daniel Meyer has a particular affection for handling Richmond bullion in preference to Eureka, although the "commissions" of the latter company "would have been nearly double ours." We have been taught to believe that American financiers do not work for love but for money. I am of opinion that it would be better to forego half-a-dozen dividends than to get into the same hole as the Tybo Consolidated Mining Company. Some of the shareholders may think differently, but if I mistake not their over anxiety to reap large dividends may prove a danger, and the pinch for funds may even now be at work. The 1½ bonus dividend would have been of more benefit to the company had it been in the company's bank than in the pockets of the shareholders. It is the custom of the Eberhardt Company to have its bullion sent to England, and it could be of no less advantage to the Richmond Company to adopt a similar course. The cost for shipment might be heavy, still there would be substantial advantages attending it, besides giving greater satisfaction to the shareholders. It would be interesting to know the cost of the late fire; it has no doubt been a great strain on the funds to meet the loss.

Capt. Tonkin's report of the Richmond Mine is eagerly looked for. Opinions are canvassed as to its contents; none, however, but those officially connected with the company can at present know its contents, but it is well known that as a true miner he advocates a three years' reserve of ore. Has Richmond got this reserve? If not, then Capt. Tonkin will not have failed to point it out. The shareholders ought to have the report as early as possible, and unnecessary delay should be avoided. Another depressing influence is the lawsuit, which it is said will come on in February or March. And, again, part of the debentures are due in March. With the present state of affairs it would be wiser to renew these than to have to borrow money at American rates. It must be remembered that these debentures were created to get out of the hands of the bullion agent, and it would be a pity to go to him now so that they might be paid off. At some future time I may go into the cost of fuel supplied to the mines, having the documentary evidence of the offi-

cials, besides indirectly the opinion of an experienced charcoal-burner who has been visiting in England. WILLIAM GABBOTT, 8, Draper's Gardens, London, Jan. 8. Stock and Share Dealer.

MINING PROSPECTS ON THE PACIFIC COAST.

SIR,—In last week's Journal "E. J. J." described how the interests of shareholders were sacrificed by the incompetence of directors, and being connected with one of the mines referred to I should like to enquire whether any of your readers can inform me if anyone is in charge of the Chicago Company's Mine except a United States official, for if the Silver King mentioned by your San Francisco correspondent be the Silver King which the Chicago Company claim as theirs, the directors seem determined, by leasing the mine to continue the erroneous policy already begun. If it pays the people who lease the mine surely it ought to pay the company if honestly worked. The shareholders, however, get little or no information. A SHAREHOLDER.

GOLD IN INDIA.

SIR,—I have carefully perused Mr. Pegler's report on the Gold in the Wynaad, in the Journal of Nov. 23, page 1303, and find it composed of many scientific words, without any particular meaning in them, and his sketches of the Wynaad are so incorrect that it would be almost a waste of time to comment on them. I lived for some length of time in the Wynaad, and prospected it almost in every part, and am quite convinced of its richness in gold and other minerals. In the early part of 1877 I laid my discoveries before Messrs. W. Nicol and Co., merchants, Bombay, who shortly afterwards sent out from London a geologist to confirm my report. At first I was informed his name was Mr. Pegler, but a few days prior to his arrival I received intimation that his name was to be James Oliver. At this time I had word, both from London and Scotland, warning me to be cautious of the person who was coming out, and that his report would possibly be an adverse one, for some special purpose.

Shortly after Mr. Pegler's arrival I received information from Messrs. W. Nicol and Co. that he (Oliver) had reported that there was no gold in paying quantities, or alluvial ground in the Wynaad, all had been wrought out centuries ago, and that there was no reef on the Seeputee Estate; in fact, that the whole affair was a ———. This was a confirmation of the intimation I had previously received.

As soon as he heard the result of the prospecting undertaken by the Government of India, and anticipating the exposure he had every reason to expect, he writes to the Journal, stating "that whilst he was prosecuting his survey in the Wynaad every impediment was thrown in his way, and it was only by a ruse that he was able to get to see the Alpha Mines at all." To say the least, such a statement is the very opposite from the truth. I have at present a letter of Mr. Pegler's to a friend, in which he states that he was getting every facility and assistance from Mr. Harris in prospecting the place. Whilst Mr. Pegler was a guest of mine at Seeputee I know for a certainty that the managing directors of the Alpha, Wynaad Prospecting, and the Prince of Wales Mines specially invited him to pay their mines a visit, I assert that he did visit them, and I defy him to say there was any concealment whatever. Had he known my first reports of the place would have been confirmed by Mr. Brough Smith such a subterfuge would not have been adopted. I am sorry to refer to these things, but truth and justice compel me.

Cardew House, Redruth, Jan. 8.

EDWIN HARRIS.

GEOLOGY OF NORTHUMBERLAND.

SIR,—In looking a second time over the Journal of Nov. 16 I see a short review of a work by a Mr. Lebour on the geology of the above county. I have no knowledge of the gentleman, and should not have intruded on your kindness with my remarks, but I see the work is for the instruction of young students in the development of the mineral resources of the county. Under this intimation I think it is only right your readers should be informed that our knowledge of geology is not so recent in the North that we require a new theory to teach us what the rocks and strata are, and as he seems ignorant of their position we must conclude he is also of their age. The rocks are the whin and the tenth limestone. The strata section is from 190, and the coals measure strata from 73, all measurements in depth given, with the veins or faults, the same sections are found all over the world, therefore any instruction—based on a theory of recent formations—is certainly erroneous. See the quotation, "Commencing with the deposits still forming it is shown that there are readily observable deposits of sub-recent drifts—Permian, upper carboniferous, lower carboniferous, and Silurian formations, and igneous rocks." These are Sir Charles Lyell's carboniferous sections, with his Silurian strata mixed up without order, and such a conglomeration of incomparables that it would have surprised Sir Charles to have seen such a misrepresentation of his "fact." We have no drift in this county even in Sir Charles's meaning, and the "igneous rocks" I presume is the whin, which is not in strata in this county, as at Cross Fell, in Cumberland, where it is in section 44 yards. This said whin being laminar all over the world in the lead measures (I challenge refutation) clearly refutes the ridiculous idea of its igneous origin, like the granites (when in mass), mountain limestone, greenstone, hornblende, syenites, gneiss, porphyries, schists, and shales; their depth is not known, and very few know their clays or their beddings, or boulders or cobbles, or we should not see such absurd theories of geology. By the recent meetings of the geologists it seems the drift theory is nearly out of date, see Nov. 20 on "Distribution of boulders by other agencies than icebergs." Where will the drift be under these agencies? See again the errors of this formation theory, the shales of the mountain limestone, called "traps," Dec. 4 "mica traps," Kendal and S-berg district. These shales are found bedded in the limestone about 100 fathoms from surface, and from 50 to 60 fathoms deep. Veins passing through you always find the throw, often many fathoms, and a cross vein causes these saps; they sunk into these near Barrow for coal, and found a sap of iron ore. The shales, erroneously called "traps," are situated above the tenth limestone on the section. The limestones are laminar, and 21 in number, and are found in the same order and position all over the world. The author remarks, "That the general geology of the county is simple in its broad features; the beds, as a whole, slope to the sea, so that anyone travelling from the coast to the Scotch border across the country would always be encountering older and older formations." It is very evident the simplicity of the "broad features" have quite misled the author. No other reason can account for such mistakes in the rocks and strata of the county. What beds are sloping to the sea I am at a loss to know. The four large veins or faults passing through the rocks, strata, and coal measures are well known, with all their measurements in depth, so far as worked into. The veins throw are down to the north-east many fathoms, and the courses north and south to the west magnetic. The sun cheeks must in each case be the reverse. The strike of rocks is quite natural, and the beds are not moved from the horizontal, only along the baset on the lines of the veins. (See what those experts at South Wynaad, India, call quartz reefs, evidently a vein on the baset of the rock, very likely 50 or 60 fms. or yards, white quartz, tinged with iron, and perhaps 100 ft. wide.) The faults whin changing from rock to strata move the measures down many fathoms; how these veins keep their undeviating course every miner knows. The colliers have all their sections, and know every band one from another with their measurements. Again, the author states, "It must be confessed that several large faults in the north of the county are not yet sufficiently understood to be included in a general statement of this kind." Without giving an account of the veins or faults any statement would be useless, because it is only at these the strata is moved its thin ade and dip. You know how many fathoms, yards, or feet the beds are moved. Had the author condescended to read the weekly reports in the Mining Journal of the workings of mineral veins, with all their different matrices in every rock or strata they pass through, and made himself acquainted with the sections of strata and coal measures prepared to his hand, he would no doubt have had to confess the "broad features" of the county are not quite so simply as he imagined. The faults are

not sufficiently understood. Clearly so, because no person holding the theory of igneous action can reconcile such an absurd distinction of chemical combinations. The faults in the coal measures give an undeniable reputation of the theory.

The author's geology is certainly very simple, equally so with the parties from whom he adopts it. Sir Charles Lyell's sections and the traps of the county by two professors would enable him to make any theory of recent formations he liked, but they should not have omitted the 40 miles of coal measures, which the author has not discovered. It is evident the rocks, strata, veins, and coal measures will not be geologised or mineralised after this theory; they are matters of fact, speak for themselves, and however fictitiously they may be misrepresented their unchangeable position, separate and distinct chemical combinations, and undeviating order will when understood put to silence theories so untenable. The author's work inculcates another improved theory, that of "successional rocks" that indicate epochs of geological time without any doubt the greatest literary imposition of the day, for instance can the author prove any rocks exists below the syenites (these rocks are close at home)? See how the experts of North America have carried out this sort of teaching the repeated reports sent to this country of their haphazard, enormously expensive trials, and consequent failures, the terms used showing how unacquainted they are with the rocks, strata, and veins. Who ever heard of tissue veins, quartz reefs, auriferous deposits, rock-bearing strata, metaliferous deposits, and when at fault then comes the theory of geology, sedimentary strata, contortions, disturbances, upheavals, denudations, igneous action, ice action, alluvial beds, and numerous other terms. To mystify the learned, and mislead the ignorant, and make Dame Nature perform more miracles than is to be found in the Romish Calendar.

P.S. With your permission I will make a few remarks on the exports of the South Wynaad gold veins and thin rocks, matrices, &c. *Kent's Bank, Jan. 7.* GEO. ATTWOOD, Sen.

LEAD MINING IN THE CHRISTOW DISTRICT.

SIR,—I notice in last week's Journal a letter from Mr. Salmon, of Ulverston, on the subject of the Reed Mine, now called the Devon Silver-lead. I have not seen the Journals excepting this one for the last few weeks, but it would appear from Mr. Salmon's letter that some one is anxious for information on the subject of the lode which yielded so much ore in the last working of the property. Being in the neighbourhood recently, I spent some time in inspecting the mine and investigating its actual merits. I had samples taken from various parts of the many large burrows lying on the surface, and was astonished on their being vanned at the large quantity of lead produced, which can be accounted for only by the fact of the late workers being deficient of machinery with which to dress their ores. There is a very large quantity of this burrow stuff, quite enough to last years in dressing, and yield a splendid profit, indeed, I am assured that men in the immediate neighbourhood are anxious to operate upon it, pay their own costs, and give the owners 10s. in 12. of the value of the product.

The lode, as Mr. Salmon correctly states, has been worked quite up to the southern boundary of the property, where it is now to be seen standing in the end of the level 18 ft. wide, and as it extends northward untouched for a distance of 40 fms., and can be worked to a depth of 50 fms. from surface without cost in pumping water, I augur a most successful future for the adventurers.

I hear from the best authority that the Frank Mills Company are about to work the Exmouth part of the sett, which abuts upon the Reed by means of the adit level, which drains the latter.

CORNUBIA.

BWLCH UNITED MINES.

SIR,—I was much pleased to see in the Supplement to the Journal of the 4th inst. an account of the meeting of the shareholders in this mine, and to find by it that Mr. C. C. Marvin was appointed as one of the directors of this company, and was gratified at his expressing himself—"I strongly recommend, labour being now abundant, that an additional force should be put on in the above level (the 60) to open out the ore ground more rapidly." If this advice is acted on, and 5000 expended in repairing machinery and putting the dressing apparatus and machinery into proper order, ore enough can be raised from the stopes in the bottom of the 60 fm. level to pay the entire cost of the mine. It may be just as well to remark here that I believe the ore now found in the 60 has never been seen in the 70, but that the level there has been driven by the side of the ore, and this will be proved by continuing the deepening of the stopes, or it might possibly be proved by putting a dial carefully through the workings. If I thought the shareholders were to wait for the sinking of the shaft from the 90 to the 100 fm. level, and from the 100 to the 110 fm. level, and in these levels to open out profitable ground for stoping, and paying agency both in London and locally all the time this proceeding was being carried out (for it is a work of years), I should certainly never have recommended anyone I was acquainted with to put their money in for that purpose. I may say that I have always represented it as my firm opinion that immense bodies of ore were left standing in the shallow levels, from whence great profits would be derived. The little that has been done goes to confirm that opinion most thoroughly, and, in a few words, we have now only to follow a certainty to ensure a present success, instead of following an uncertainty, and wasting years in doing so. There are a thousand reasons for adopting the former, whilst there can be no real genuine one for the latter. By the former we shall soon have a rich dividend mine—by the latter a continual drag, and not unlikely a most deplorable failure.

Aberystwith, Jan. 6.

ABSALOM FRANCIS.

CARDIGANSIARE MINES.

SIR,—When I wrote to you some twelve months back under the *non de plume* of "Hard Times" I little thought my worst anticipations were to be more than realised, but unfortunately it is so. The hard weather has stopped most of our mines, some temporarily, but some I fear will not resume work unless a better price can be had for the ore, and I can see no immediate sign of such good luck. With the close of the year the old Goginan Mine gave up the ghost—deep working, poor lode, and low price killed it. Whether it will ever be revived I cannot say, but I fear the remarks of your reporter for this district as to deep mines will hold good in this case. Goginan was once paying a royalty of over 200000 a year, but for some years past has not I fear averaged as many shillings (royalty). The old and well-known firm of J. Taylor and Sons are, therefore, fast abandoning this county—the more is the pity. They were one of the first firms in the kingdom for integrity and straightforwardness, and their successors, if they have any, will be fortunate if after (say) 20 years they can show such good results on their stewardship. I am not going to go into statistics, but the returns of Goginan, the Lisburnes, Cwm Eirin, &c., during the past go far to show that mines in this county can be made to pay if only a fair price can be had for the mineral; there are quite as rich treasures as they produced lying hid awaiting the successful strike of the pick. Although these misfortunes have fallen heavy on us, and many men are out of work, there is no great pinch as yet amongst the mining population, and it is a pity there should be, for they are a hard working, industrious, and sober community, and are anxious to meet their masters half way these "hard times." They are sensible enough to know that "half a loaf is better than no bread," and are quite willing to take the half and wait for better times. If, therefore, there is any chance of an improvement—say of only 20 per cent. in the price of lead—now is a good time to embark in mining in this county, but I fear if the present price is to last not a mine in the county can pay (a profit).

I leave it to others to say what chances we have of an improvement in this respect, but cannot but remark that the suggestions of many of your correspondents as to levying a tax on lead imported into this country seems to be deserving of notice and support. Free trade may be a beautiful theory—so would a universal religion—but it seems to me impracticable as long as there is not general co-operation in it. At present it appears like buying a sovereign for 21s. and selling it for 30s. The benefit of it to the community,

if there is any, is infinitesimal and unappreciated. The damage to individual industries great and oppressive. Granted, for instance, that America can sell us lead 5s. a ton cheaper; if we tax that lead and it comes in we get 5s. from one pocket and put it in the other; but, on the other hand, if we stop it, and, as we are well able, supply ourselves from our home mines, we get the whole benefit of the price of the produce—(say) at present 10s.—and the 5s. which we compel it to rise in value—that is to say, the general public suffer to the extent of 5s., but the mining community benefits to the extent of 15s., and that 15s. filters through and improves every branch of home trade. Take another instance, tobacco, which we import and tax and prohibit the production of it at home at all, although there are many parts of Ireland where it was actually largely produced. This may be a simple method of raising revenue, but can it possibly benefit the country at large? I have digressed greatly from my subject, and encroached greatly on your space, so will say no more; others are more able exponents of the principles of trade and commerce than I am. I am aware that it would be impossible to establish any principle which would please everybody. I cannot look very hopefully forward to the future, but one and all must manfully put their shoulders to the wheel, and with old English perseverance and doggedness push on. We must have less wages, more economy, and lower royalties, and with the legitimate support of the public, we may yet glide over these—HARD TIMES.

Jan. 9.

THE DISTRESS IN CORNWALL.

SIR,—The Cornish bank failure has caused further anxiety and increased suffering in the western and mining districts of Cornwall, and its industrial enterprise is almost wholly paralysed by the suspension of capital, of mines, clay works, slate quarries, and ship yards. The crisis is becoming so severe among the labouring classes that it behoves the Cornish magistracy to organise a system of instant relief by a public proposal of an emigration movement to remove many hundreds of families to New Zealand and Australia. No doubt upon an official invitation Sir Julius Vogel and Sir Arthur Blyth would join in organising such a movement on behalf of those colonies, and upon official application would come forward as agents and offer free passages for acceptance by sailingships from Plymouth to Australia. There are several thousand men in Cornwall competing for employment at this time, and requiring constant relief from dearth of employment, and the benefit would be mutual to Cornwall and to those colonies if a few hundred families could be induced to emigrate, the present population being excessive in Cornwall for its requirements and subsistence, and until such speedy relief be attempted and organised the increasing and alarming distress will become quite unmanageable in this remote corner of England, where excessive poverty is now prevalent, arising from the wants of a large unemployed surplus population; and Cornwall would be relieved of a burden now weighing down the industry of its labour if the Australian Government emigration agents will speedily assist to organise an emigration movement and offer free passages for emigrants' embarkation at Plymouth for Adelaide and New Zealand during this pressing and rapidly-extending misery at this time of need and privation among the Cornish kinfolk of Australian colonists.

The Cornish magistracy have only to take the initiative action to bring about such relief and Cornwall by its good results assuredly would brighten up from the present deepening gloom and suffering, and it would tend to the good of—

Truro, Jan. 8.

STRIKES—DEVON GREAT CONSOLS.

SIR,—If "A Cornishman" thinks that I would in any way injure or countenance any injustice towards the poor man he errs. I look upon strikes as injurious to the men themselves in a contest for what is, in some cases, wrong, and when right is their object, they take wrong means to secure it, the end sought after, even if obtained, not justifying the sacrifices. Take Devon Great Consols as an instance. The directors wished to return to the calendar month payment, instead of the recently introduced four-weeks system. The men objected, insisting on the continuance of the four-weeks pay, and because the directors would not surrender their purpose the men left work en masse, and remained idle several months, thereby losing their wages for that period, which amounted to probably 200 per man—a loss which they can never repair. It is true that they partially gained their point—the four weeks—and nothing else, the pecuniary loss stands. The contention of the men may be called by some persons manly, but there was more of folly than any other quality in their conduct. It is to be hoped that the loss they sustained has taught them a lesson which will prevent a repetition of such ill-advised proceedings as those which led to it.

If we take a view of the results of strikes in general we find them to be unmitigated evils—drunkenness, poverty, bankruptcy, stoppage of works, &c. The man who promotes strikes is an enemy to humanity. There has not, that I know of, occurred a single case which warranted a strike, nor one which was beneficial in its results to the promoters.—*Truro, Jan. 7.* R. SYMONS.

[For remainder of Original Correspondence, see to-day's Journal.]

THE SCOTCH MINING SHARE MARKET—WEEKLY REPORT AND LIST OF PRICES.

During the past week markets have been dull, but the recent generally improved tone in financial circles may be said to continue. There has, indeed, nothing new transpired to have an important influence on prices, except it may be the return of the money market to comparative ease. The failure of the Cornish Bank having had very little effect might also be favourably construed as showing the public have been prepared to see the weaker firms cleared away in the course of the months of waiting and anxiety that have been passed through; but, on the other hand, it is feared it may be some time yet before the trade of the country regains a normal profitable condition.

In shares of coal and iron companies, the principal business has again been in Benhar, which have fluctuated between 14s. 6d. and 23s. 6d., and now stand at 18s., or an advance of 1s. 6d. per share for the week. The meeting on Monday, at which it was unanimously resolved to carry on the concern by raising more capital in a manner which appears quite practicable, has greatly improved the intrinsic value of the shares, though it will be noticed the market price is very little altered. By the success of this scheme the small amount of ready money required will be obtained, and under new management the company would again become prosperous, and pay fair dividends, when the ordinary shares are bound to rise a great deal. Marbella are offered 7s. lower, at 25s., and should be worth attention, as if the iron trade was in anything like a normal condition this company would be paying a dividend. The other movements are reductions of 15s. in Ebbw Vale at 55s. to 65s. per share, and of 1s. 3d. on Scottish Australian (new). Andrew Knowles and Sons are at 7d. Ashton Vale, 80s. Bilboa, 20s. Boleck, Vaughan (A), 47; and ditto (B), 29. Bowling, 81s. Brown, Bayley, and Dixon, 10s. 6d. Carriff and Swane, 25s. Carnforth, 90s. Charles Cammell and Co., 15s. Chillington, 40s. to 50s. Consett, 17s. Darlaston Debenture (A), 12s. Great Western, 40s.; ditto (pref.), 50s. Henry Briggs (A), 11s. John Brown and Co., 23s. 3d. Mantz's Metal, 65s. prem. Newport Abercrombie, 75s. Parkgate, 21s. 6d. Pelas, 10s. 6d. Rhymney, 13s. Sandwell, 14s. Scottish Australian, 30s. to 35s. Sheepbridge, 39s. 6d. South Wales, 50s. Stand Lane, 60s. Staveley (A), 7d. Tredgar (A), 11s. Ulverston, 7s. West Cumberland, 7s.

Shares of foreign copper and lead companies are steady. Tharsis opened at 21s. 2d., and after declining to 20s. 3d. recovered to 21s. 2d., or about the same as last week's price. Cape shares also. Rio Tinto 5 and 7 per cent. bonds are now quoted ex div. The usual interim dividend has been declared on West Prussian (pref.), shares at 8 per cent. for the past quarter. English and Australian are at 20s.; Flurina, 77s. 6d.; Linares, 80s.; Yorke Peninsula, 2s. to 4s.; ditto preference shares, 15s.

There is not much more business doing in home mines shares. East Vans are lower at 30s. to 35s., although the report is considered a little better. Full particulars of the mines directly interested in the Cornish Bank failure are not known yet, but it is so far fortunate that Killfretth is not one of them. It is proper to point out that in the case of progressive mines, however, the indirect consequences such as their shareholders being unable to pay calls through their money being locked up in the failed bank may be serious. But there is another view of the misfortune which is more pleasant, in so far as it will forcibly bring to an end the operations of any mines that are carrying on operations at a loss. This decrease in production may help the recovery in the price of metals, and enable the sound and well conducted mines to increase their profits. For such struggling, but well conducted and exceedingly promising, speculations as Killfretth and a few more, therefore, the prospects are on the balance improved instead of clouded by the bank stoppage. Barmbydale are at 5s.; Bodrieth, 2s. East Canadian, 3s. 6d.; East Roman Gravel, 20s.; Great Laxey, 17s. to 18s.; Great Wheel Eleanor, 5s. 6d.; Rookhope, 5s. to 6s. 3d.; South Conduvor, 10s. 6d. to 11s. 6d.

Shares of gold and silver mines are generally declining. Richmond are 12s. 6d., lower at 10s. to 10s. 6d., and the run from the mine is again 35s. 000. Don Pedro are exceptionally in request on very favourable reports from the mine. It is so far satisfactory that the St. John del Rey Mining Company have managed to get the

provincial tax modified to 4 per cent. on net profits, and they are trying to procure its entire abrogation. The account given at the Almada and Tinto meeting was more encouraging than foreshadowed in the half-year's report. They have sufficient funds to last for about a year, and the policy they are working upon is to utilise the burrows and refuse heaps; the profit so derived on the ore reduced helps to continue the exploratory works, and it is confidently expected good results will yet be attained in some part of the mine. The Pastorena United gold returns for December have been 714 tons, average yield 9 dwts. 2 grs. Birdseye Creek are at 13s. 9d. Chicago, 10s. to 20s. Chontales, 8s. to 10s. Colorado United, 30s. to 35s. Eberhardt, 65s. Emma, 2s. Exchequer, 3s. 9d. Flagstaff, 4s. to 5s. 6d. Frontino, 40s. Gold Run, 3s. to 5s. I.X.L., 2s. to 4s. Port Phillip, 11s. Roma Grande, 1s. 3d. Santa Barbara, 30s. to 34s. South Aurora, 2s. 6d. to 5s. United Mexican, 60s.

In shares of oil companies, Uphall are 7s. 6d. higher, but Oakbank are 4s. lower. The Dalmeny Company has just announced its dividend at 5 per cent., instead of 15 per cent. paid at this time last year. Young's Paraffin have been steadily from 12s. to 13s. all the week. Price's Patent Candle, 10s. Runcorn Soap and Alkali, 10s. 6d.

Shares of miscellaneous companies more freely offered. London and Glasgow Engineering, &c., shares 30s. lower. The Scottish Val de Travers Paving Company declared a dividend of 5 per cent. on the ordinary shares at the meeting yesterday. Avonide Engine are at 8s. 6d. Milner's Safe, 7s. 4d. New Bombrero Phosphate, 10s. 6d. Palmer's Shipbuilding (B), 13s. 6d. Phospho-Guano, 7s. to 8s. 6d. United Liners, 30s. Prices of wagon companies' shares are—Birmingham, 15s.; Bristol, 35s. 6d.; Bristol and South Wales, 50s. prem.; Gloucester, 7s.; Lancaster, 65s.; Metropolitan, 40s. prem.; Midland, 10s.; Railway Carriage, 80s.; Swansea, 40s.; Western, 45s.; Wakefield Rolling Stock, 25s.; and Yorkshire, 14s. Shares of chemical companies dull, and prices are—Langdale's, 85s.; Lawes, 8s. 6d. to 9s.; and Newcastle, 30s. to 40s.

BWLCH UNITED MINES (Limited).—This company held their annual meeting the other day. They are working the well-known valuable silver-lead sett known as Bwlch and Pwllhrydnad, situate about 7½ miles east of Aberystwith, and within a mile of the main road between Llanidloes and that town. The mines about on the celebrated Goginan Lead Mines on the west and south, while on the north there is East Darren. Two shafts have been sunk on the old Bwlch lode, which has returned during the last company's operations upwards of 70,000 tons of ore. The mine is now well supplied with water-wheels and other efficient plant. It is worked exclusively by water-power. The ore produce is rich in silver. From the richness of the neighbouring mines, and the encouraging reports of numerous and eminent mining engineers upon this property, it is evident the shares will prove very remunerative to investors. The manager's report is published regularly in the *Mining Journal*. The lease has 12 years to run, with every prospect of a 20,000l. in 12 shares, with 7s. 6d. paid-up on each share.

The following calculations show the yield per cent. on the money invested at present prices in the shares named, based upon the last average yearly dividends being maintained. In oil companies shares Dalmeny would yield 5, Oakbank 8, ditto (new) 7½, Uphall 4½, and Young's Paraffin 11½. Arncliffe Colliery would yield 12½, and Cairn-table 14½. Tharsis Mine would yield 8½, and the new shares 8½. Phospho-Guano would yield 10½, Scottish Wagon old or new shares 6½, United States Rolling Stock 4½, and Val de Travers Paving 10. Great Laxey Mines would yield 8½, Liverpool Rubber 7½, Milner's Safe 6½, and Starbuck Wagon 7½.

BENHAR COAL COMPANY (Limited).—At the adjourned meeting of this company on Monday, the motion proposed at the previous meeting by Mr. Forrest in favour of carrying on the concern by a board of directors to be appointed in accordance with a proposed agreement with the creditors, whereby they are to postpone their claims, was adopted by an overwhelming majority. It was further agreed that the capital be increased by 100,000l., to be created by preference shares, as recommended by the directors. The chairman stated the company would not only have a new board of directors, but also new officials. Between creditors and shareholders they had got subscribed close upon 50,000l. of preference stock, and if the body of shareholders cordially supported them the necessary capital would be easily obtained. One of the creditors said he knew of a further sum of 8000l. to 9000l. that would be secured for carrying on the company, and a shareholder who said he had been to Nidder described it as one of the best undertakings in the country, and which would easily pay 7½ per cent. Previous to the above meeting the chairman issued a circular unofficially reiterating his desire to avoid a disastrous liquidation, and, if possible, preserve the undertaking to its proprietors. The board, he states, unanimously desire to resign in order to permit any new management that may be satisfactory to proprietors. Influential creditors have promised to allow time, and if the debenture-holders also forbear, and the shareholders come forward and subscribe for preference stock, the real difficulty may be overcome.

It will be remembered that at the last meeting of this company the interim liquidator was authorised to obtain the opinion of counsel as to a point raised—whether in a case of voluntary liquidation it was competent to continue the business in its usual way for any time. Counsel state that it would not either be competent or expedient to fix any definite period for the business being so carried on, but a pure resolution to wind up voluntarily would empower the liquidator to carry on the business to such an extent and for what time as may be expedient for a beneficial realisation; and if before such realisation the company should again become solvent, an order might be obtained from the Court to stay the winding up, and allow the company to resume business. They are of opinion that unless the company were put into liquidation the whole creditors' consent the business could not be carried without risk of preference being obtained by individual creditors. Actions and diligences already instituted and used would not be stopped by a simple resolution to wind up voluntarily, but for that end it would be necessary to present application to the Court before 60 days to place the voluntary liquidation under supervision, or by taking an order for judicial winding-up. The latter course they would not recommend, as a voluntary winding-up under supervision has all the advantages of official liquidation without its disadvantages.

Capital.	Dividends.	Description of shares.	Last price.
Per share.	up. Previous.	Rate per annum.	
£ 10	28	£ 7 1/2	£ 5
10	10	4	4
100	50	31s. 6d.	25s.
10	10	10	10
10	10	4s. 1/2	April, 1878.
10	10	10	10
23	20	10s. Dec. 1877.	10
10	6	nil	nil
10	10	nil	nil
10	10	nil	nil
10	10	nil	nil
10	10	nil	nil
10	10	nil	nil
10	10	nil	nil
10	10	nil	nil
10	10	nil	nil
100	100	5	5
1	1	15	15
1	10s.	15	15
Stock	100	nil	nil
4	4	4	4
10	7	7s. 6d.	35s.
1	1	7 1/2	2 1/2
1	15s.	7 1/2	2 1/2
10	9 1/2	nil	nil
10	10	8	8
20	20	7	7
100	100	5	5
10	10	20	17 1/2
10	7	20	17 1/2
1	1	1	1
1	1	1	1
1	1	1	1
5	5	30s.	10s.
10	7	15	15
1	1	25	15
1	5s.	15	15
10	10	7 1/2	2
10	10	10	10
10	10	10	10
10	8 1/2	17 1/2	17 1/2
50	25	5	6
7	7	15	10
10	10	6	6
10	4	6	6

† Interim. ‡ Per share. * For six months of 1878.

NOTE.—The above lists of mines and auxiliary associations are as full as can be ascertained, Scotch companies only being inserted, or those in which Scotch investors are interested. In the event of any being omitted, and parties desiring a quotation for them and such information as can be ascertained from time to time to be inserted in these lists, they will be good enough to communicate the name of the company, with any other particulars as full as possible.

J. GRANT MACLEAY, Stock and Share Broker.

Post Office Buildings, Stirling, January 9.

NEW WHITE METAL.—A new alloy of great hardness and brilliancy has been invented by Mr. OCTAVE LECHESNE, of Shepherd's Bush. It is composed of copper 650 parts, nickel 275 parts, zinc and tin 25 parts, and cadmium 50 parts = 1000 parts. The quantities of zinc, tin, and cadmium indicated in this formula may be varied, according as he wishes to obtain more or less homogeneity or whiteness in the metal; but what he expressly claims is the use of a certain quantity of cadmium, as the conjunction of this metallic substance has never been claimed in any formula patented for the production of white metal.

MECHANICAL VENTILATION OF MINES.

THE UNION ENGINEERING COMPANY (C. SCHIELE AND CO.) undertake the Construction and Erection of their Colliery Ventilation Fans, of all sizes up to the largest required quantities of air. The leading features of their system are now generally known. Some of the specialities are: The absence of necessity for costly erections in masonry and brickwork: the small space required for the Machines, and the moderate first cost of the whole.

As the Fans are in a great measure self-contained, the necessary seats and connection with Pit are of a simple and inexpensive character. They can be arranged to be placed below ground when required, and also to work on

Drawing Shafts. Certain sizes are often used to assist in Furnaces, with good effect.

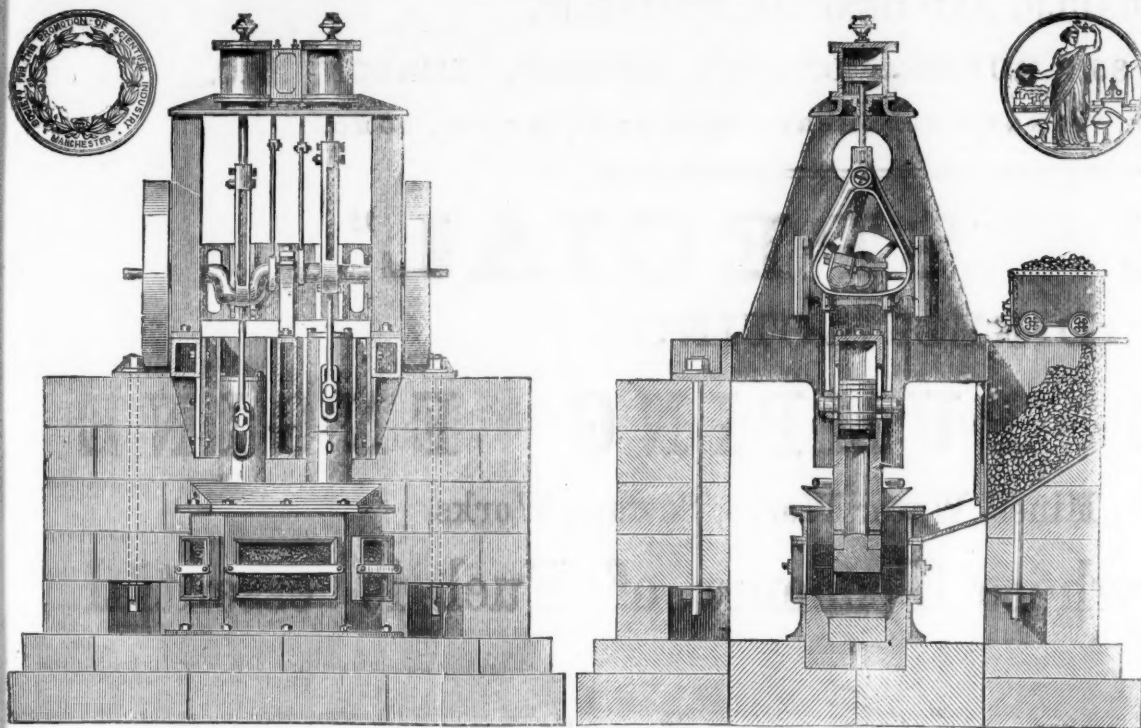
(Estimates and further information will be prepared on receipt of the necessary particulars.)

FOR SINKING PURPOSES, and also for places where small quantities of air are needed for Ventilating purposes, a Special Fan is made, in various sizes, with small engine combined, complete, arranged for both forcing and exhausting air.

NOISELESS BLOWING FANS, for Smithy Fires, and other purposes.

COAL-CUTTING MACHINERY, WINDING, HAULING, AND OTHER DESCRIPTIONS OF STEAM-ENGINES.

THE UNION ENGINEERING COMPANY (C. SCHIELE & CO.),
PNEUMATIC AND HYDRAULIC ENGINEERS,
(SOLE PROPRIETORS AND MAKERS OF SCHIELE'S LATEST PATENTS),
2, CLARENCE BUILDINGS, BOOTH STREET, MANCHESTER.



SHOLL'S PATENT DIRECT-ACTING PNEUMATIC STAMPERS,

For Pulverising Tin and Lead Ores, Gold Quartz, &c.,

SOLE MAKERS FOR CORNWALL,

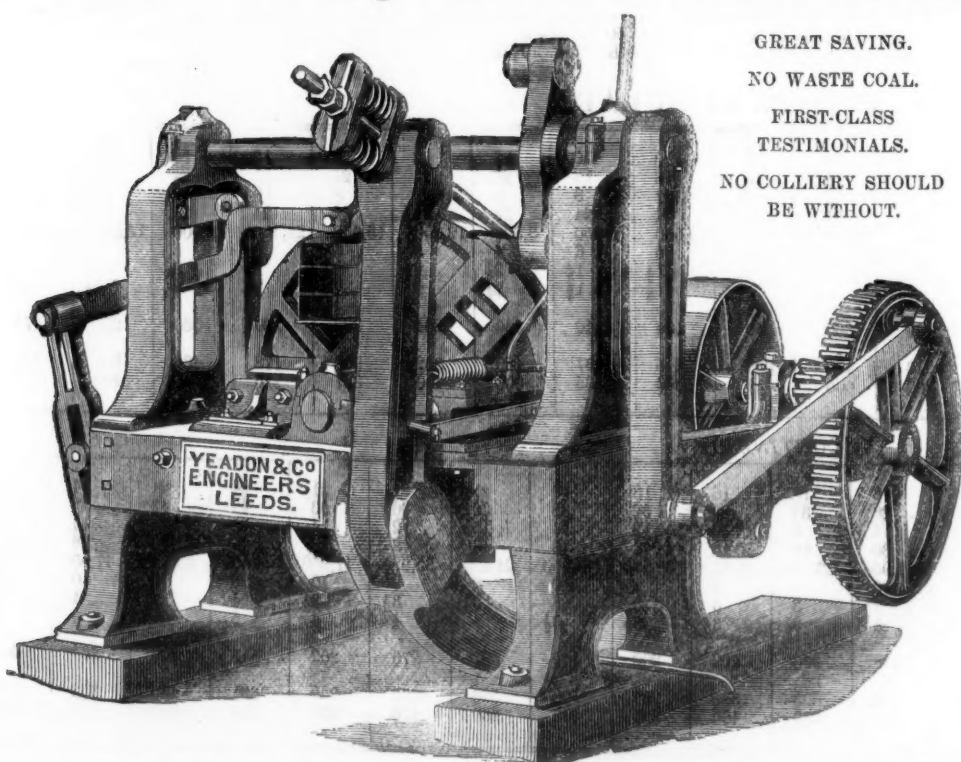
N. HOLMAN AND SONS,

ST. JUST FOUNDRY, NEAR PENZANCE, CORNWALL.

ROTARY STAMPERS SUPPLIED ON THE SAME PRINCIPLE, ALSO WITHOUT STUFFING BOXES OR GLANDS, WHERE RUNNING GEAR EXISTS, OR WITH HORIZONTAL CONDENSING ENGINES AND BELTS TO DRIVE THEM, IF PREFERRED.

Also, **SOLE MAKERS OF STEPHENS' PATENT PULVERISER.**
MINING AND OTHER MACHINERY CONSTANTLY ON SALE,
NEW AND SECOND-HAND.

PATENT BRIQUETTE MACHINE.



GREAT SAVING.

NO WASTE COAL.

FIRST-CLASS
TESTIMONIALS.

NO COLLIERY SHOULD
BE WITHOUT.

These Machines utilise smudge or small coal by making it into Briquettes or blocks of compressed fuel at the rate of 36,000 per day. The cost of preparing, mixing, and making is under One Shilling per ton. The Briquettes sell readily for Locomotives, Household, or other purposes. Full particulars on application to—

YEADON AND CO., ALBION PLACE, LEEDS.

TURBINE WATER-WHEELS, specially designed and adapted for use in Coal Mines, for high falls of water, for the purpose of developing water power, where it is available, for use in hauling, pumping, and other works.

The Firm, having had an experience of nearly twenty-five years exclusively in the above Special Departments of Engineering, are prepared to advise on any matter affecting the application of Fans or Water Power in Collieries or elsewhere.

FOREIGN MINING AND METALLURGY.

The New Year has commenced, unfortunately, with the extinction of the blast-furnaces in Belgium. One of these now extinct furnaces is situated at Marcinelle, and is the property of M. Dupret; the other is at Châtelineau, and is owned by MM. Gilain and Co. The revival in business so anxiously anticipated for the last four years has thus not yet taken place, and the question is beginning to be discussed whether prices will yet go lower. The Westphalian Railway Company will let a contract for 783,000 tons of steel rails at Muns er, on Jan. 22. An application has been made for a concession of mineral bearings in the Grand Duchy of Luxembourg by a group of Belgian and Luxembourg interests. The minerals in question are situated in the basins of Esch-sur-Alzetto and Rodengo-Lauraelaine, and their approximate extent is 250 acres. The annual rent which the concessionaires undertake to pay ranges from 2000l. to 3600l. per annum, according to the current price of pig-iron in the Grand Duchy. The rough profit realised in 1877-8 by the Esperance Longdoz Metallurgical Company was 5734l.; this amount was, however, insufficient to meet the fixed interest and other charges of the year.

Deliveries of coal have been maintained with a fair amount of regularity in the Belgian basins, and at Liège and Charleroi there is accordingly less grumbling on the part of coalowners. If France is occupying herself with the improvement of her navigations Belgium does not wish to remain behind-hand. The Syndical Union of Brussels has actively taken up the question, which is, of course, intimately associated with the prosperity of Belgium.

The Prussian Minister of Commerce has just presented to the Prussian Chamber of Deputies some data upon the mining industry of Prussia in 1877. Production would appear to have been generally curtailed in Prussia as elsewhere in 1877. The extraction of coal during the year 1877 declined to 33,672,024 tons, as compared with 34,466,249 tons in 1876. The production of lignites was also rather smaller in Prussia in 1877. The metallurgical production of Prussia slightly increased in 1877, but prices and profits declined.

Ordinary household qualities of coal maintain a quotation of rather more than 2l. per ton in France. As regards industrial qualities of coal, there is great stagnation of business in consequence of the persistent depression in the metallurgical interest. The sugarworks require, however, rather more coal for industrial purposes. In the basin of the Loire the condition of coal mining industry has somewhat changed for the worse. Shares in companies owning French ironworks have been rather drooping of late. The turnover in the Paris house of the mechanical concern known as J. F. Cail and Co. declined from 440,000l. in 1877 to 280,000l. in 1878. The Spanish Senate has just approved a law providing that the public services of Spain shall in future use Spanish coal exclusively; hitherto they have employed English coal to some extent.

A coal seam, estimated to contain 75,000,000 cubic metres of coal, having been discovered at Puerto Llano, in Estremadura, the Alicante Railway Company has resolved on constructing a branch line thither.

A Charleroi report says that the metallurgical market continues to become more and more stagnant. Four rolling works have resolved to blow out several furnaces. Coal finds, meanwhile, a tolerably good market.

The Russian Government has placed an order for steam dredging machines, ballast lighters, and a steam tug, required in connection with the construction of the Libau harbour, with the Vulcan Joint-stock Machine Works at Stettin. The armour plates for the new German corvette Wurtemberg are to be made at the Dilling Iron-works. Hitherto only English plates have been used. Stettin papers, however, say that the armour plates turned out of the Dilling Works during the past twelve months have completely displaced the English plates.

A letter from Hamburg states that the arrivals of English coal at Westphalia have considerably decreased. The competition with English coal has been more keen lately, owing to the very cheap rates of freight by sea for the latter. Dealers as well as consumers say that with a judicious selection of the kinds best suited for different purposes, the Westphalian coal equals the English and in some respects surpasses it. The Hamburg-American Steam Packet Company, the Hamburg and South American Steamship Company, and other steam lines use Westphalian coal exclusively, and have partly renewed their contracts for several years. As we have previously stated, all the wharfs for the Imperial Navy are supplied exclusively with Westphalian coal. The export trade beyond seas has also improved during the past year.

METALLURGY OF QUICKSILVER AT ALMADEN, SPAIN.—In a long and exhaustive paper in the Annales des Mines on the mines and works of Almaden, Spain, M. Kuss calls attention to the fact that the ancient processes of extraction, dating from 1648 and 1806, used there are not nearly so wasteful of mercury as has hitherto been supposed. At the suggestion of Emile Pellet, a French engineer, inventor of a new furnace, a series of experiments were made in 1869 and 1872 to ascertain exactly how great the losses of mercury in working the ore really were. Estimates published officially as late as 1860 placed them at from 49.82 to 53.40 per cent. The results of the experiments conducted by Luis de la Escosura and F. Botella showed that the loss of metal was only 4.95 per cent. for the old Bustamente furnace, and 5.5 for the Idria furnace, from ore the average percentage of which is 8 to 9 per cent. A trial with the Pellet furnace revealed the fact also that the older constructions worked more cheaply and were more healthy. Thus the cost of treating the ore by the Pellet furnace was almost five times as great as by the Idria process. The facts just given show the absolute necessity of careful checking of operations on a large scale by assay. The experience of the Almaden engineers, (although it is unparalleled in the annals of metallurgical art to exaggerate losses), may serve as an example to numerous metallurgical enterprises in this country, which we fear are labouring under the more common and more dangerous error of underrating the amount of metal which is carried off in the tailings or disappears through the chimneys. The total production of the Almaden mines since the time they were worked by the Spaniards in 1564 was 120,180 tons; 17,864 tons being produced from 1564 to 1700; 42,149 tons from 1790 to 1800, and 60,166 tons from 1800 to 1875. The production in the last years was:—

1870-1Tons 1185	1873-4Tons 976
1871-21135	1874-51264
1872-31155		

The cost of production per ton, including mining, smelting and general expenses, in the same years was respectively, \$252, \$264, \$236, \$292, and \$255 per ton. The number of people employed varied between 3400 and 3800.



PARIS EXHIBITION, 1878.

GOLD AND SILVER MEDALS AWARDED for
Steam-Engines & Boilers, also the Special Steam Pump,
with Holman's Condenser & Compound Pumping Engine.



TANGYE BROTHERS AND HOLMAN,

HYDRAULIC AND GENERAL ENGINEERS,

CORNWALL HOUSE, 35, QUEEN VICTORIA STREET, LONDON, E.C.,

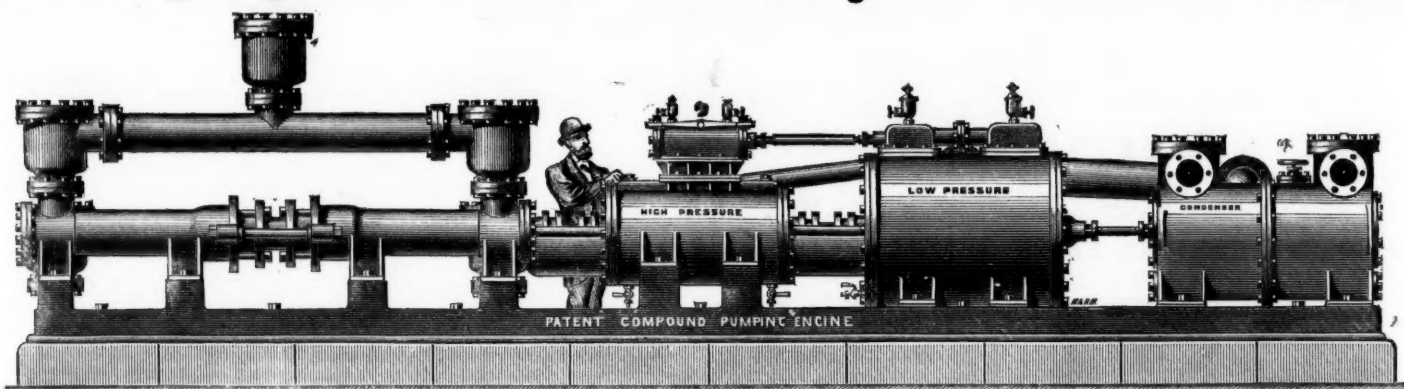
AND BIRMINGHAM, (TANGYE BROTHERS), CORNWALL WORKS, SOHO.

THE "SPECIAL"

DIRECT-ACTING

COMPOUND PUMPING ENGINE

For use in Mines, Water Works, Sewage Works,
And all purposes where Economy of Fuel is essential.



THE "SPECIAL" DIRECT-ACTING COMPOUND PUMPING ENGINE, WITH AIR-PUMP CONDENSER.

After several years of successful application for all purposes to which steam-driven pumps can be applied, THE "SPECIAL" STEAM PUMP STILL MAINTAINS THE FIRST POSITION IN THE MARKET, notwithstanding that it alone—of all direct-acting pumps—has been subjected to the great variety of severe tests that must be encountered in such a period of time. Some valuable improvements have been suggested in the course of a long experience, and their adoption has rendered the apparatus at once

THE SIMPLEST AND MOST CERTAIN IN ACTION.

The illustration shows an extension of the principle of this Pump to a Compound Steam Pumping Engine, by which the economical advantages resulting from the expansion and condensation of steam are very simply and effectively obtained. The steam after leaving the high-pressure cylinder is received into and expanded in the low-pressure cylinder, and is thus used twice over before being exhausted into the condenser or atmosphere. The Engine combines simplicity, certainty of action, great compactness, fewness of parts, and consequent reduction in wear and tear.

Several thousands of the "Special" Steam Pumping Engines, with high-pressure cylinders only, are in use in British and Foreign Mines, Water Works, &c.,—and for confined situations, or where Engines of a comparatively small size only are necessary, they will still meet all requirements—but their application will be very largely increased, since it has been found practicable to embrace the important features of expanding and condensing the steam, so that increased power may be obtained, and the consumption of fuel greatly economised.

THE "SPECIAL" DIRECT-ACTING COMPOUND STEAM PUMPING ENGINE is the most simple appliance for deep mine draining and general purposes of pumping ever practically developed, and the first cost is very moderate compared with the method of raising water from great depths by a series of 40 to 50 fathom lifts. No costly engine-houses or massive foundations, no repetition of plunger lifts, ponderous connecting rods, or complication of pit-work are required, while they allow a clear shaft for hauling purposes.

SIZES AND PARTICULARS.

Diameter of High-pressure Cylinder.....In.	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14
Ditto of Low-pressure Cylinder.....In.	14	14	14	18	18	18	18	21	21	21	21	24	24	24	24
Ditto of Water Cylinder.....In.	4	5	6	5	6	7	8	6	7	8	10	7	8	10	12
Length of stroke.....In.	24	24	24	24	24	24	24	24	24	24	24	36	36	36	36
Gallons per hour approximate.....	3900	6100	8800	6100	8800	12,000	15,650	8,800	12,000	15,650	24,450	12,000	15,650	24,450	35,225
Diameter Suction and Delivery.....In.	3	3½	4	3½	4	5	6	4	5	6	8	5	6	8	9
Diameter High-pressure Steam Inlet.....In.	1½	1½	1½	1½	1½	1½	1½	2½	2½	2½	2½	2½	2½	2½	2½
Diameter Low-pressure Steam Exhaust.....In.	1½	1½	1½	1½	1½	1½	1½	2½	2½	2½	2½	2½	2½	2½	2½
Height in feet water can be raised with 40 lbs. pressure per square inch in Non-condensing.. cylinder.....	360	330	160	360	250	184	140	360	264	202	130	360	275	175	122
Ditto ditto ditto—with Holman's Condenser...	480	307	213	480	333	245	187	480	352	269	173	480	367	234	162
Ditto ditto ditto—with Air-pump Condenser...	600	384	267	600	417	306	335	600	440	337	216	600	459	203	203

CONTINUED.

Diameter of High-pressure Cylinder.....In.	16	16	16	16	18	18	18	18	21	21	21	24	24	24	30	30
Ditto of Low-pressure Cylinder.....In.	28	28	28	28	32	32	32	32	36	36	36	42	42	42	52	52
Ditto of Water Cylinder.....In.	8	10	12	14	8	10	12	14	10	12	14	10	12	14	12	14
Length of stroke.....In.	36	36	36	36	48	48	48	48	48	48	48	48	48	48	48	48
Gallons per hour approximate.....	15,650	24,450	35,225	47,950	13,650	24,450	35,225	47,950	24,450	35,225	47,950	24,450	35,225	47,950	35,225	47,950
Diameter Suction and Delivery.....In.	6	8	9	10	6	8	9	10	8	9	10	8	9	10	9	10
Diameter High-pressure Steam Inlet.....In.	2½	2½	2½	2½	3	3	3	3	3½	3½	3½	4	4	4	5½	5½
Diameter Low-pressure Steam Exhaust.....In.	3	2	3	3	3½	3½	3½	3½	4	4	4	5	5	5	6½	6½
Height in feet water can be raised with 40 lbs. pressure per square inch in Non-condensing.. cylinder.....	360	230	160	118	456	292	202	149	397	276	202	518	360	264	562	413
Ditto ditto ditto—with Holman's Condenser...	480	307	213	154	603	389	269	198	528	363	269	691	480	352	750	550
Ditto ditto ditto—with Air-pump Condenser...	600	384	267	191	750	486	337	248	660	450	337	864	600	440	937	689

PRICES GIVEN ON RECEIPT OF REQUIREMENTS.

Any number of these Engines can be placed side by side, to work in conjunction or separately as desired, thereby multiplying the work or one Pump to any extent.

NORTH OF ENGLAND HOUSE TANGYE BROTHERS, ST. NICHOLAS BUILDINGS, NEWCASTLE-ON-TYNE.
SOUTH WALES HOUSE... .. TANGYE BROTHERS AND STEEL, Tradegar Place, NEWPORT, Mon.; and Exchange Buildings, SWANSEA

HUDSWELL, CLARK & RODGERS,

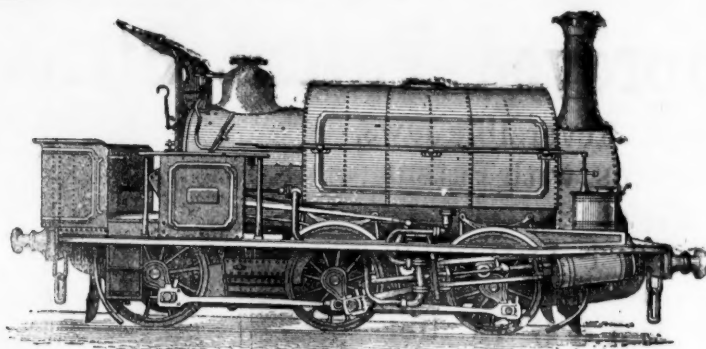
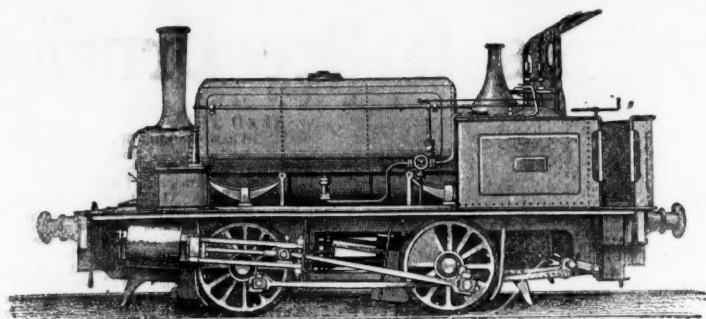
RAILWAY FOUNDRY, HUNSLET, LEEDS,

ARE NOW MAKING A GREATLY IMPROVED
CLASS OF

TANK LOCOMOTIVE,

EITHER ON FOUR WHEELS OR SIX, OF
VARIOUS GAUGES,

IN WHICH EXTRA STRENGTH AND DURABILITY ARE COMBINED WITH SIMPLICITY AND ECONOMY IN REPAIRS.



FIRE BOXES—Copper. TUBES—Brass. TYRES—Steel. AXLES—Steel. BOILER PLATES AND MACHINERY of the best Yorkshire Iron.
NEW LOCOMOTIVES, with Cylinders 8 in., 10 in., and 13 in. diameter, always in stock or in progress. SECOND-HAND LOCOMOTIVES, of various sizes FOR SALE OR HIRE.

PRICES AND SPECIFICATIONS ON APPLICATION.

Awarded Gold Medal, Paris Exhibition, 1878,

AND THE PRIZE MEDALS AT LEEDS, MANCHESTER, AND WREXHAM EXHIBITIONS, 1875 AND 1876.

HADFIELD'S STEEL FOUNDRY COMPANY,

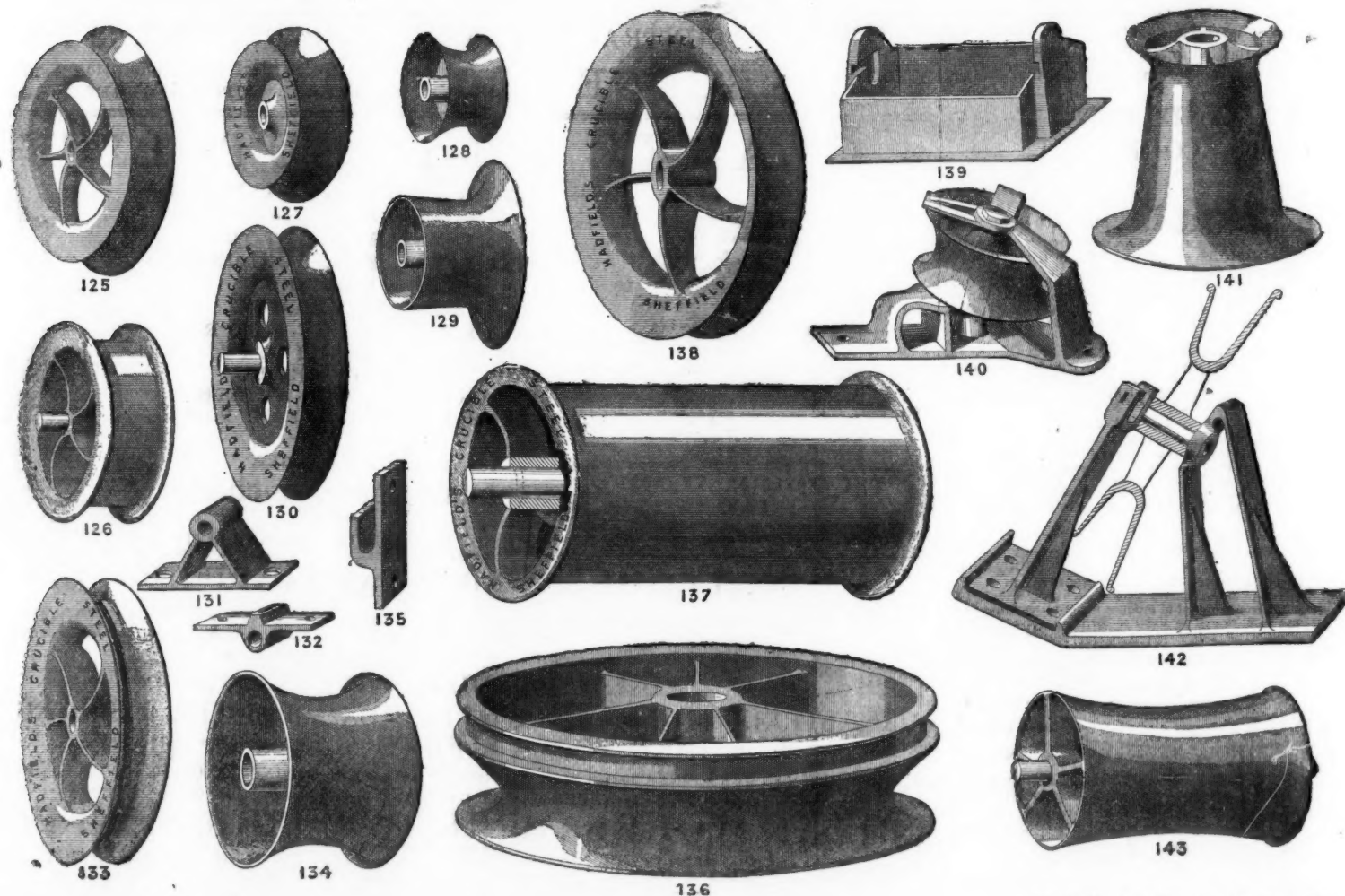
ATTERCLIFFE, SHEFFIELD,

DEVOTE THEIR EXCLUSIVE ATTENTION TO THE MANUFACTURE OF

CRUCIBLE STEEL CASTINGS, for Engineering and Mining Purposes,

AND ARE THE SOLE MAKERS OF

Hadfield's Steel Rollers and Pulleys.



This Advertisement is varied from time to time.

The following are some of the advantages claimed by the above Rollers and Pulleys:—

- 1.—LIGHTNESS.—They are cast by us from one-third to one-half lighter than cast-iron.
- 2.—SAVING OF HAULAGE POWER AND WIRE ROPES.—Our Pulleys and Rollers, being extremely light, they effect a great saving in haulage power, and considerably prolong the life of wire ropes. As our Rollers and Pulleys are equally balanced, and never lopsided, the instant the rope or chain touches they readily revolve, and all grinding or sawing by the rope is avoided.
- 3.—STRENGTH.—Although extremely light they cannot be broken by ordinary means—say by the sudden passing of chains over them such as frequently connect the rope to the wagon, or hang loose from the end of the passing wagons.
- 4.—DURABILITY.—One of our Crucible Steel Rollers or Pulleys will outlast about TWELVE IRON ONES.
- 5.—They reduce wear and tear to a minimum, and are a great saving in working expenses.

FOR LIST OF PATTERNS, SIZES, AND WEIGHTS SEE LISTS No. 7 FOR ROLLERS AND No. 7A FOR PULLEYS.

[This Sheet of Drawings is Copyright.]

At the PARIS EXHIBITION the Jurors have Awarded

THE GOLD MEDAL, THE SILVER MEDAL, AND HONOURABLE MENTION FOR MY LATEST PATENTED STONE BREAKERS AND ORE CRUSHERS.

Stones broken equal, and Ores better, than by hand, at one-tenth the cost.

H. R. MARSDEN,

ORIGINAL PATENTEE AND SOLE MAKER OF BLAKE'S

Improved Patent Stone Breakers & Ore Crushers.

New Patent Reversible Jaws,
in Sections, with Patent
Faced Backs.

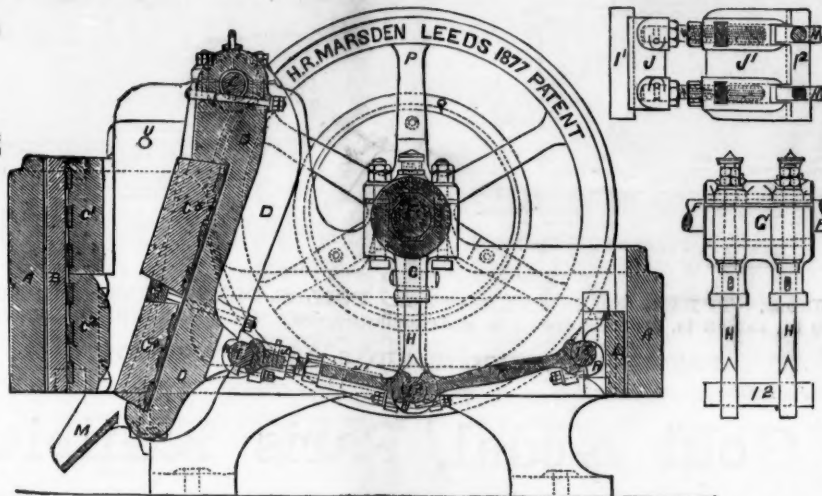
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TOGGLES.
OVER 2500 IN USE.

New Patent Draw-back
Motion.

NEW PATENT STEEL TOGGLE BEARINGS.

70

PRIZE MEDALS.



READ THIS—

Wharfedale Lime Works, Maryport, Whitehaven,
November 7, 1878.
H. E. MARSDEN, Esq., Soho Foundry, Meadow Lane, Leeds.
DEAR SIR,—The machine I have in use is one of the large
size, 24 in. by 12 in. The quantity we are breaking daily with
this one machine is 250 tons, the jaw being set to break to a
size of 2½ in. We have, however, frequently broken over
300 tons per day of ten hours, and on several occasions over
350 tons during the same period. The stone we break is the
blue mountain limestone, and is used as a flux in the various
ironworks in this district. We have now had this machine in
daily use for over two years without repairs of any kind, and
have never had occasion to complain of any inconvenience in
using the machine. I hope the one you are now making for
me may do its work equally well. The cost—INCLUDING EX-
CISE-POWER, COALS, ENGINEMAN, FEEDING, and all EXPENSES
OF EVERY KIND—is just 3d. per ton. Should any of your
friends feel desirous of seeing one of your machines at work,
I shall have much pleasure in showing the one alluded to.
I am, dear Sir, yours very truly,
WILLIAM MILLER.

AND THIS—

Wharfedale Lime Works, Aspatia, Cumberland,
July 11th, 1878.
H. R. MARSDEN, Esq., Soho Foundry, Leeds.
DEAR SIR,—We are in receipt of your letter of 4th inst. I
may just state that the stone breaker above named has been
under my personal superintendence since its erection, and I
have no hesitation in saying that it is as good now as it was
five years ago.
I am, dear Sir, yours faithfully,
FRANCIS GOULD.

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H. R. MARSDEN, SOHO FOUNDRY, LEEDS, ENGLAND.

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TIONAL EXHIBITION," in Dublin, 1865; at the "UNIVERSAL EXPOSI-
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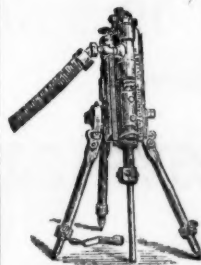
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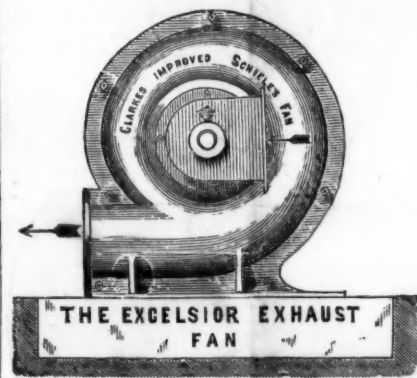
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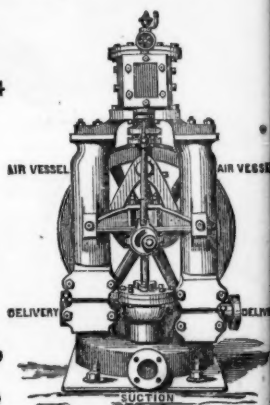
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